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(72) Creator	Yoshikazu MUTO c/o CKD Seiki Limited, 110, Gouhigashiminami, Aza, Takao, Oaza, Fuso-cho, Niwa-gun, Aichi JAPAN
(72) Creator	Kouichi MIYAKE c/o CKD Seiki Limited, 110, Gouhigashiminami, Aza, Takao, Oaza, Fuso-cho, Niwa-gun, Aichi JAPAN
(71) Applicant	CKD CORPORATION 3005 Hayazaki, Aza, Kitatoyama, Oaza, Komaki-shi, Aichi JAPAN
Examiner	Hiroaki TAKASE
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From column 1, line 1 to column 2, line 3

[Claim]

A pressure regulating valve provided with a valve plug 3 disposed on the input port 1 side (upstream) of a valve bore 17 between an input port 1 and an output port 2 to open or close the valve bore 17, a stem 6 interposed between the valve plug 3 pressed by a closing spring 5 in a valve opening direction and a diaphragm assembly 7, a pressure regulating spring 8 for pressing the valve plug 3 in a valve opening direction via the diaphragm 7 and the stem 6, and a siphon tube 10 for allowing communication between a diaphragm chamber 12 exerting a secondary (valve-outlet) air pressure on a diaphragm against the pressure regulating spring 8 and the output port 2, characterized in that:

the valve bore 17 is brought in communication with the output port 2 at a pushed-through position of the stem 6, and a cylinder portion 20 having the same internal diameter as the valve bore 17 is provided in a valve body;

a piston 19 provided to the stem 6 is inserted into the cylinder portion 20, and this piston 19 separates the cylinder portion 20 from the valve bore 17 and the output port 2, and

a communication bore is provided that allows communication between the cylinder portion 20 separated from the valve bore 17 by the piston 19 and the input port 1, and the cylinder portion 20 is adapted to be always in communication only with the input port 1 so that only a primary pressure is always supplied to the cylinder portion 20 at least during a normal control operation during which a constant secondary pressure is maintained.

From column 4, line 33 to column 5, line 7

[Operations of the Present Technical Means]

According to the present technical means, the primary pressure from the input port acts on a lower surface of the valve plug and also on an upper surface of the piston through the communication bore, thereby creating an offsetting condition. Thus, the primary pressure does not cause the valve plug to move and hence does not cause the secondary pressure to change. Furthermore, the secondary pressure acting from the valve bore side on the valve plug in the valve opening direction is balanced with the secondary pressure acting on the piston in the closing direction. Thus, the secondary pressure does not cause the valve plug to move. Therefore, the pressure balancing function of the present invention is not different from that of the conventional pressure balancing type pressure regulating valve.

Furthermore, a pressure balancing operation is obtainable even when the cylinder portion serving for balancing pressure is brought into communication with the input port. Thus, the cylinder portion can be brought into communication with the input port for water removal without losing the pressure balancing operation, which is not the case with the constitution of the conventional pressure regulating valve. What is more, the cylinder portion side of the communication bore is located at a higher position than the other side. Thus, the water accumulated in the cylinder portion can be easily drained off into the input port.

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